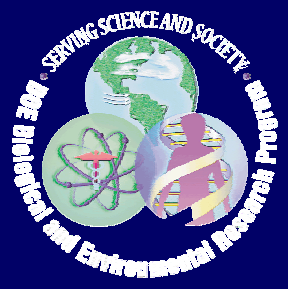
DOE/NIH Workshop on Thermographic Approaches to Medical Diagnosis and Therapy

Department of Energy



National Institutes of Health

Bethesda Hyatt

December 3-4, 2001

Welcome and Charge

Dr. Donna Dean

Acting Director

National Institute of Biomedical Imaging and Bioengineering

DOE/NIH Workshop

- Attendees – about 30 people from academia, DOE national laboratories, and NIH intramural and extramural programs
- Identify applications of thermographic and other approaches to disease diagnosis and therapy
- Concentrate on optical, magnetic resonance, and acoustic modalities
- At a minimum – facilitate communication and information exchange
- At a maximum, facilitate possible research collaborations and projects involving DOE, NIH, and academia

Logistics

- Workshop begins at 8 AM on Monday and ends at ll:30 AM on Tuesday.
- Presentations will be in the Diplomat/Ambassador Rooms
- Breaks and lunch will be in the Embassy Room
- Networking session will be in Congressional Room
- Dinner Monday – On your own

Important People

- Sharon Haddock (MasiMax) – Hotel, travel, local logistics
- Mark Brown (Masi Max) – Hotel, travel, local logistics
- Anita Harris (OER) - Logistics
- Mollie Sourwine (NIBIB) – Program and workshop issues

Program

- Hybrid of suggestions for interactive workshops
- Monday - Three 1 ½ hour technical sessions and 30 minute breaks – MR, optical, and acoustics
- Networking session – 4:30 to 5:30 on Monday
- NIH grant application and review process
- Tuesday – Results, opportunities, vision, and course of action

DOE Resources and Interests

Dr. Michael Viola

U. S. Department of Energy

Office of Biological and Environmental Research

NIH Extramural Research

- Office of Extramural Research (OD)
- Center for Scientific Review (CSR)
- Dr. Jean Sipe (CSR) – NIH Application and Review Processes – Monday, 12:30 PM.
- Details on related programs on Tuesday morning

NIH Intramural Imaging Research

Dr. King Li

Associate Director of Radiology and Imaging Sciences Program

NIH Clinical Center

NCI Diagnostic and Therapeutic Imaging and Thermography Interests

Dr. Edward Staab

Chief – Diagnostic Imaging Branch

National Cancer Institute

Workshop Objectives

- Identify applications of thermographic and other approaches to medical diagnosis and therapy based on microwave, acoustic, and optical modalities
- Facilitate communication and possible research collaborations between academic, DOE laboratory, and NIH investigators
- Communicate opportunities for funding related research
- Determine a course of action to facilitate collaborations and future research

Questions to Consider

- What are the most promising and novel applications of imaging modalities to disease diagnosis and therapy based on thermographic techniques?
- What specific research should be pursued to realize potential benefits?
- What are obstacles or problems affecting research in these areas?
- Are there specific areas where DOE, NIH, and academic collaboration can effectively address the barriers or problems?
- What actions can be taken to realize the identified applications?

To be successful, we must

- Stay on time.
- Realize that most follow-up plans and initiation of discussions concerning collaborations will occur during breaks and non-plenary sessions. Must allow time.
- Interact.
- Stay focused on the mission and the questions.

Strategies for MR temperature Imaging

Dr. John Hazle

Department of Imaging Physics

M. D. Anderson Cancer Center

Session I – 10 AM to ll:30 AM

- Electromagnetic Imaging Methods for Thermal Monitoring and Assessment – *Keith Paulsen (Dartmouth College)*
- Cooking Tumors: Clinical Implications of Thermometry – *Brad Wood (NIH/CC)*
- Electromagnetic Technologies – *John Chang (DOE/LLNL)*
- Magneto Carcinotherapy – *Robert Kraus (DOE/LANL)*

NIH Grant Application and Review Process

Dr. Jean Sipe

Scientific Review Administrator

Center for Scientific Review

Session 2 – 1 PM to 2:30 PM

- Application of Non-Invasive Thermometry Using MR Imaging – *Thad Samulski (Duke University)*
- Infrared Imaging in Diagnostics, Therapy, and Fundamental Research of the Living Tissue – *Alexander Gorbach (NIH/CC)*
- Thermographic Imaging at Microscopic Scales Using Magnetic Resonance Microscopy – *Kevin Minard (DOE/PNL)*
- Acoustic Interaction with Heat-Stressed Tissue – *Morris Good (DOE/PNL)*
- BioMEMS/Microfluidics Technology and Micro-channel Cooling – *Murat Okandan (DOE/Sandia)*

Session 3 – 3 PM to 4:30 PM

- Ultrasound-Mediated Biophotonic Imaging – *Lihong Wang (Texas A&M University)*
- Antiangiogenic Gene Therapy Using Heat Either to Activate Promoters or Thermometry to Follow Changes in Blood Flow – *Steve Libutti (NIH/CC)*
- Applications of Swept-Frequency Acoustic Interferometry – *Dipen Sinha (DOE/LANL)*
- Phased Acoustic Arrays – *Graham Thomas (DOE/LLNL)*
- Ultrasonic Field Intensity Distributions in Random Inhomogeneous Media – *Ronald Roberts (Ames Laboratory)*

Networking Reception – 4:30 to 5:30 PM

- Congressional Room
- Hors D'ouvres
- Cash bar
- Think about questions and objectives
- Start at 7:30 AM on Tuesday – Continental breakfast